

### REMARKS

By Office Action mailed December 12, 2003, pending claims 1-10 stand rejected, reconsideration of which is respectfully requested in view of the above amendments and following remarks. Claims 1-10 have been amended. New claims 11-25 have been added. Claims 1-25 are now pending.

#### Objection to the Claims

The Examiner has objected to the use of the abbreviation "PEGDGE" in claim 2. Accordingly, Applicants have amended claim 2 to recite "polyethylene-glycol-di-glycidyl-ether" rather than "PEGDGE." Support for this amendment may be found at page 7, lines 25-26.

Claim 10 is objected to as indefinite for not setting forth the steps involved in the claimed method. As set forth above, Applicants have amended claim 10 to properly recite as a method claim.

#### Rejection Under 35 U.S.C. §101

The Examiner has rejected claim 6 as an improper process claim under 35 U.S.C. §101. However, as claim 6 is directed to a metal ion-specific capacity affinity sensor produced by a method according to any one of claims 1-5, Applicants respectfully traverse this ground of rejection.

#### Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 1-10 stand rejected under 35 U.S.C. §112, second paragraph, as indefinite for the reasons set forth on pages 2-3 of the Office Action. For purpose of clarity, Applicants will address each ground of rejection in the order set forth by the Examiner.

(a) Claims 1 and 6 have been amended to remove the terminology "preferably at least 95%, more preferably at least 97%, and most preferably at least 99%" and new claims 14-16 and 22-24, directed to such embodiments, have been added.

(b) Claim 3 has been amended to remove the terminology "such as glutaraldehyde" and new claim 17, directed to such embodiment, has been added.

(c) Claim 5 has been amended to remove the terminology “and preferably is 1-dodecanethiol” and new claim 18, directed to such embodiment, has been added.

(d) Claim 1 has been amended to specify that the metal ion-specific capacity affinity sensor is “suitable for determining the presence of a certain heavy metal ion of interest *in a contacting solution*” (emphasis added). As set forth on page 4, lines 2-5, the sensor of the present invention is electrically equivalent to a capacitor between the conducting metal electrode (*i.e.*, the noble metal piece) and the conducting solution.

(e) Claim 6 has been amended to depend from any one of claims 1-5.

(f) Claim 7 has been amended to recite in proper Markush format. In addition, for purposes of clarity, Applicants have amended claim 7 to recite “and functional derivatives thereof, wherein the functional derivatives have binding characteristics equivalent to SEQ.ID.NO.1, SEQ.ID.NO.2, SEQ.ID.NO.3, or SEQ.ID.NO.4”. For the Examiner’s reference, the term “function derivatives” is defined at page 7, lines 19-22.

(g) Claim 8 has been amended to remove the terminology “wherein said affinity groups specifically binds to said heavy metal ion of interest”.

(h) Claim 8 has been amended to remove the terminology “according to per se known methods” from steps b) and c).

(i) Claim 8 has been amended to be directed to “a method for *qualitatively* determining the presence of a certain heavy metal ion of interest in a liquid sample” (emphasis added). Accordingly, the step of calculating has been removed from claim 8. In addition, new claim 25, directed to “a method for *quantitatively* determining the presence of a certain heavy metal ion of interest in a liquid sample” (emphasis added), comprising the step of calculating, has been added.

Accordingly, in view of the above arguments, Applicants submit that the pending claims satisfy the second paragraph requirements of §112 and request that these grounds of rejection be withdrawn.

Rejections Under 35 U.S.C. §103(a)

Claims 1-10 stand rejected under 35 U.S.C. §103(a) as unpatentable over Hilpert (EP 263948) in view of Berggren and Fowlkes (U.S. Patent No. 5,935,823), Kay (U.S. Patent No. 5,498,538), Lopez (U.S. Patent No. 5,972,656) or Wylie (U.S. Patent No. 6,111,079) for the reasons set forth on pages 3-6 of the Office Action. More specifically, the Examiner states that it would have been obvious to immobilize the detection compounds of Hilpert through a process as taught by Berggren and that it would have been obvious to substitute the metal complexing peptides of Fowlkes, Kay, Lopez or Wylie for the phytochelatin of Hilpert.

Applicants respectfully traverse these rejections and submit that Berggren cannot serve as a prior art reference under §103(a) for the following reasons:

(1) Berggren was not published more than one year prior to the U.S. filing date of the present application and, thus, cannot serve as a §102(b) reference for purposes of novelty or under §102(b)/§103(a) with regard to obviousness. The present application is a U.S. national stage application, filed under 35 U.S.C. §371, of International Application No. PCT/SE98/01638. As such, the effective U.S. filing date of the present application is the same as the filing date of the international application, namely, September 15, 1998. The publication date of Berggren, namely, September 15, 1997, is not more than one year prior to this effective U.S. filing date.

(2) Berggren was not published before the invention of the claimed subject matter by Applicants and, thus, cannot serve as a §102(a) reference for purpose of novelty or under §102(a)/§103(a) with regard to obviousness. The present application claims priority under 35 U.S.C. §119(a) and §365(b) to a Swedish application, namely, Swedish Patent Application No. 9703315-3, filed September 15, 1997. For the Examiner's reference, a copy of the Swedish priority document, as filed with the international application is attached. This Swedish priority document may be relied upon by Applicants to evidence a date of invention prior to the effective U.S. filing date of the present application. The publication date of Berggren (*i.e.*, September 15, 1997) is not before this date of invention.

Accordingly, in view of the above, Applicants respectfully submit that Berggren cannot serve as a prior art reference under §103(a) and request that the obviousness rejections premised thereon be withdrawn.

Amendments to the Claims

As a final matter, in light of the foregoing amendments to claims 1, 3 and 5-8, Applicants have further amended the pending claims as set forth above to correct inconsistencies in terminology and other typographical errors. Applicants respectfully submit that no new matter has been added by way of these amendments.

In view of the above amendments and remarks, allowance of claims 1-25 is respectfully requested. A good faith effort has been made to place this application in condition for allowance. However, should any further issue require attention prior to allowance, the Examiner is requested to contact the undersigned at (206) 622-4900 to resolve the same. Furthermore, the Commissioner is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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Enclosure:

Copy of Swedish Patent Application No. 9703315-3

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